CLAIMS

1(Amended). A cooling device, comprising:

a cooler provided on at least one side-wall side of a chamber formed with a thermal insulating box;

a cooling chamber in front of the cooler; and

a fan that allows air in the cooling chamber to flow,

wherein the cooler and the cooling chamber are partitioned by a partition so as to allow cold air to be accumulated in the cooler,

the fan is disposed on a side of the cooler relative to the partition,

the partition in front of the fan has an aperture formed in a flat sheet portion,

an open space is formed between the fan and the flat sheet portion in which the aperture is formed, and

cold air accumulated in a space inside the partition and hot air in the cooling chamber are exchanged by the fan through the aperture.

2. The cooling device according to claim 1, wherein dimensions of the aperture are larger than a diameter of the fan.

3. The cooling device according to claim 2, wherein when viewing the fan in a direction of a rotation shaft of the fan, the fan is disposed in the aperture and there is an open space outside the fan.

4. The cooling device according to claim 1, wherein rotation of the fan generates a discharged flow of cold air discharged from the cooler to the cooling chamber through the aperture and a sucked flow of cold air sucked from the cooling chamber to the cooler through the aperture.

5. The cooling device according to claim 4, wherein the discharged flow and the sucked flow collide with each other, thus suppressing a flow speed of the cold air.

6. The cooling device according to claim 1, wherein the fan is disposed above the cooler.

7. The cooling device according to claim 1, comprising a plurality of combinations of the fan and the aperture.

8. The cooling device according to claim 1, wherein a slit is formed in

Explanations based on the Specification of PCT Article 19(1)
(PCT Rule 46.4)

Claim 1 has been amended to have a configuration such that an open space is formed between a flat sheet portion of a partition and a fan. In this configuration, when the fan is rotated in the normal direction so as to introduce the air at the rear of the fan to the front of the fan, there is a room for allowing the air in the cooling chamber to flow to the cooler side by a suction force of the fan.

Therefore, the outflow and the inflow of the air through the aperture concurrently occur, so that the flow speed of the discharged flow into the cooling chamber can be weakened. Therefore, cooling performance can be ensured, while the amount of frost deposited on the cooler can be reduced.

The configuration of document 1, as shown in Fig. 1, does not have a fan that is disposed on a side of a cooler relative to a partition, but an inner edge surface of an aperture surrounds the fan. Therefore, a gap between the fan and the aperture forms an air course for promoting the air flow from the cooler to the cooling chamber when the fan is rotated in the normal direction.

The configuration of document 2, as shown in Figs. 1 and 2, does not have an open space formed between a flat sheet portion of a partition and a fan, but an extended portion from the partition surrounds a space in front of the fan. Therefore, the extended portion forms an air course for promoting the air flow from the cooler to the cooling chamber when the fan is rotated in the normal direction.

In the configurations of document 1 and document 2, when the fan is rotated in the normal direction, there is no room for allowing the air in the cooling chamber to flow to the cooler side by a suction force of the fan, and

both of the outflow and the inflow of the air through the aperture cannot be obtained concurrently.